

Algebra 2 Assignment 25

P319

5. Find the conjugate:  $7i$   $-7i$

7. Find the product of the complex number and its conjugate:  $-10i$   $-10i(10i) = -100i^2 = 100$

9.  $\frac{7 \cdot 2i}{-2i \cdot 2i} = \frac{14i}{-4i^2} = \frac{14i}{4} = \frac{7i}{2}$   $\frac{7i}{2}$

11.  $\frac{5 \cdot (2-i)}{(2+i)(2-i)} = \frac{10-5i}{4-i^2} = \frac{10-5i}{4+1} = \frac{10-5i}{5} = \frac{5(2-i)}{5} = 2-i$   $2-i$

13.  $\frac{(3-2i)(1+i)}{(1-i)(1+i)} = \frac{3+3i-2i-2i^2}{1-i^2} = \frac{5+i}{1+1} = \frac{5+i}{2}$   $\frac{5+i}{2}$

23.  $(5-2i)(5+2i) = 25+10i-10i-4i^2 = 25+4 = 29$   $29$

25.  $(1+i)(1-i) = 1-i+i-i^2 = 1+1 = 2$   $2$

27.  $(8-2i)(8+2i) = 64+16i-16i-4i^2 = 64+4 = 68$   $68$

29.  $\frac{(3+7i) \cdot -2i}{2i \cdot -2i} = \frac{-6i-14i^2}{-4i^2} = \frac{-6i+14}{4} = \frac{2(-3+7i)}{2(2)} = \frac{7-3i}{2}$   $\frac{7-3i}{2}$

31.  $\frac{3i(2-i)}{(2+i)(2-i)} = \frac{6i-3i^2}{4-i^2} = \frac{6i+3}{4+1} = \frac{3+6i}{5}$   $\frac{3+6i}{5}$

33.  $\frac{3 \cdot (6-4i)}{(6+4i)(6-4i)} = \frac{18-12i}{36-16i^2} = \frac{18-12i}{36+16} = \frac{18-12i}{52} = \frac{2(9-6i)}{2(26)} = \frac{9-6i}{26}$   $\frac{9-6i}{26}$

37.  $\frac{(2+3i)(3+2i)}{(3-2i)(3+2i)} = \frac{6+4i+9i+6i^2}{9-4i^2} = \frac{6+13i-6}{9+4} = \frac{13i}{13} = i$   $i$

39.  $\frac{(3-9i)(4-2i)}{(4+2i)(4-2i)} = \frac{12-6i-36i+18i^2}{16-4i^2} = \frac{12-42i-18}{16+4} = \frac{-6-42i}{20} = \frac{-3-21i}{10}$   $\frac{-3-21i}{10}$

53.  $\frac{(2+3i)^2}{(3+i)^2} = \frac{(2+3i)(2+3i)}{(3+i)(3+i)} = \frac{4+6i+6i+9i^2}{9+3i+3i+i^2} = \frac{4+12i-9}{9+6i-1} = \frac{-5+12i}{8+6i} \cdot \frac{(8-6i)}{(8-6i)} = \frac{-40+30i+96i-72i^2}{64-36i^2} = \frac{-40+126i+72}{64+36} = \frac{32+126i}{100} = \frac{2(16+63i)}{2(50)} = \frac{16+63i}{50}$   $\frac{16+63i}{50}$

